

DERWENT-ACC-NO: 1998-004724

DERWENT-WEEK: 199801

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TITLE: Connection method of coupling and  
rod shaped body e.g. shaped reinforced concrete, round bar  
- involves press fitting and pushing angular  
protrusions of formed dovetail groove notches to slits of  
opposing rectangular convex protrusions to press rod  
shaped body inside coupling

PRIORITY-DATA: 1996JP-0111254 (April 8, 1996)

PATENT-FAMILY:

PUB-NO	PAGES	PUB-DATE	MAIN-IPC
JP 09273266 A		October 21, 1997	N/A
003	E04C 005/18		

INT-CL (IPC): E04C005/18, F16D001/04 , F16S003/06

ABSTRACTED-PUB-NO: JP 09273266A

BASIC-ABSTRACT:

The method involves forming several dovetail groove notches (2) on one edge of a cylindrical coupling (1) which is cut open in an axial line direction. Several rectangular convex protrusions (3) are formed on the other edge of the coupling, opposite the dovetail groove notches. An angular protrusion (2a) is formed at the centre of each dovetail groove notch, while a slit (3a) is formed at the centre of each rectangular convex protrusion.

The angular protrusions and slits are press fitted and pushed to each other pressing a rod-shaped body inside the coupling, in which the ends of the rectangular convex protrusions unfold to the sides of the dovetail groove notches.

USE/ADVANTAGE - For construction of e.g. building, bridges.

Ensures easy coupling of rod-shaped bodies even in narrow areas using light and small tools.  
Ensures enough bonding strength due to formed female screw on inner surface of coupling.

----- KWIC -----

Title - TIX (1):

Connection method of coupling and rod shaped body e.g. shaped reinforced concrete, round bar - involves press fitting and pushing angular protrusions of formed dovetail groove notches to slits of opposing rectangular convex protrusions to press rod shaped body inside coupling

Standard Title Terms - TTX (1):

CONNECT METHOD COUPLE ROD SHAPE BODY SHAPE REINFORCED  
CONCRETE ROUND BAR  
PRESS FIT PUSH ANGULAR PROTRUDE FORMING DOVETAIL GROOVE  
NOTCH SLIT OPPOSED  
RECTANGLE CONVEX PROTRUDE PRESS ROD SHAPE BODY COUPLE

# PATENT ABSTRACTS OF JAPAN

(11)Publication number : 09-273266

(43)Date of publication of application : 21.10.1997

(51)Int.Cl.

E04C 5/18

F16D 1/04

F16S 3/06

(21)Application number : 08-111254

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(22)Date of filing : 08.04.1996

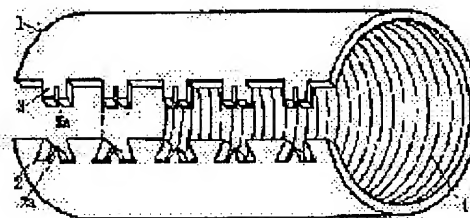
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(54) JOINT CONSTRUCTION METHOD OF BARLIKE BODY AND JOINT WHICH IS USED IN THE METHOD

(57)Abstract:

PROBLEM TO BE SOLVED: To join barlike bodies such as deformed reinforcing bars easily even in a narrow place.

SOLUTION: A plurality of knotted sections 2 like dovetail groove formed at a fringe on one side of a cylinder which is opened by cutting in the axial direction, a strap like projection part 3 is formed in opposition to each knotted section 2 at the other fringe, and a mountain-shaped protruding part 2a is formed at the center of a bottom part of each knotted section 2 like dovetail groove. An abutting part of a barlike body is covered with a joint 1 in which a slit is formed at the center of each straplike projection part 3. Each straplike projection part 3 is pressed in the knotted section 2 like dovetail groove which opposes to the projection part 3 by pressing each barlike body side of the joint 1. In this process, the mountain-shaped protruding part 2a advances into the slit, a tip side of the straplike projection part 3 is widened on both sides of the knotted section 2 like dovetail groove, and the joint 1 and the barlike body are crimped.



## LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of

rejection]

[Kind of final disposal of application other than  
the examiner's decision of rejection or  
application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision  
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[Date of requesting appeal against examiner's  
decision of rejection]

[Date of extinction of right]

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DETAILED DESCRIPTION

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## [Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the joint which uses rod-like structures, such as a deformed bar used for construction of buildings, such as a building and a bridge, for the joint method of construction and it which are compared and joined in the die-length direction.

[0002]

[Description of the Prior Art] As a joint method of construction of a deformed bar, the method of construction shown in drawing 3 is known conventionally. It is called a squeeze joint method of construction, covers the comparison section of deformed bars 5 and 5 with the tubed sleeve 9 which has allowances in a bore, binds the sleeve 9 tight, for the dice 10 of a machine, the joint method of construction is extracted in the direction of an arrow head, makes the extracted wall of a sleeve 9 eat into the print section (bamboo joint) of a deformed bar 5, and unifies it.

[0003]

[Problem(s) to be Solved by the Invention] The bolting machine used for the above-mentioned squeeze joint method of construction cannot even be used in the site which exists no less than 65kg and is constructed by the treatment being not only easy, but heavy and big two or more deformed bars 5 being close especially. Moreover, in order to take out need reinforcement, a no less than 17-28cm long thing is required for the sleeve 9 used as a joint.

[0004] This invention aims at offering the joint used for the joint method of construction and it which can join rod-like structures, such as a deformed bar, easily also in a narrow location.

[0005]

[Means for Solving the Problem] The joint method of construction of the rod-like structure of this invention forms two or more dovetail-groove-like notches 2 in one edge of the cylinder cleared in the direction of an axis. Counter the edge of another side with each notch 2, and form the strip-of-paper-like heights 3, and Yamagata projected part 2a is formed in the center of a pars basilaris ossis occipitalis of each dovetail-groove-like notch 2. By covering the comparison section of a rod-like structure 5 with the joint 1 which formed slit 3a in the center of each strip-of-paper-like heights 3, and pressing each rod-like structure [ of the joint 1 ] 5, and 5 side It is pushed in into the dovetail-groove-like notch 2 which each strip-of-paper-like heights 3 counter, and Yamagata projected part 2a advances into slit 3a in the process, and the tip side of the strip-of-paper-like heights 3 can extend on both sides of the dovetail-groove-like notch 2, and a joint 1 and a rod-like structure 5 are stuck by pressure.

[0006] The joint of the rod-like structure of this invention forms two or more dovetail-groove-like notches 2 in one edge of the cylinder cleared in the direction of an axis, counters the edge of another side with each notch 2, and forms the strip-of-paper-like heights 3, and forms Yamagata projected part 2a in the center of a pars basilaris ossis occipitalis of each dovetail-groove-like notch 2, and forms slit 3a in the center of each strip-of-paper-like heights 3.

[0007] It is good to form a female screw 4 in the internal surface of this joint.

[0008]

[Embodiment of the Invention] With reference to drawing 1 and drawing 2, the gestalt of operation of the joint used for the joint method of construction of the rod-like structure of this invention and it is explained.

[0009] As shown in drawing 1, the joint 1 used for this joint method of construction clears a cylinder in the direction of an axis, forms two or more dovetail-groove-like notches 2 in the edge of one of these, counters the edge of another side with each dovetail-groove-like notch 2, and forms the strip-of-paper-like heights 3 in it. And Yamagata projected part 2a is formed in the center of a pars basilaris ossis occipitalis of each dovetail-groove-like notch 2, and slit 3a is formed in the center of each strip-of-paper-like heights 3. The die length of each strip-of-paper-like heights 3 is made almost equal to the depth of the dovetail-groove-like notch 2.

[0010] The case hardening steel (it has surface hardness and stickiness of the interior) by which the material of this joint 1 was hardened only on the front face is suitable. Thickness must be made so thick that the size of the rod-like structure 5 for junction is size.

[0011] It is better to form a female screw 4, although the wall of a joint 1 may still be smooth.

[0012] The joint 1 with a smooth wall is chiefly used for junction of deformed-bar 5 comrades which have a bamboo joint on a front face.

[0013] Of course, the joint 1 which formed the female screw 4 in the wall can be used for junction of deformed-bar 5 comrades also at the so-called junction of the round bar and junction of a deformed bar 5 and the round bar with a smooth front face. Furthermore, the joint 1 which has a female screw 4 can make [ about 2 times / of the outer diameter of the rod-like structure for junction ] the die length short. That is because the reinforcement as for which the female screw 4 eats away on the surface of a rod-like structure, and a male screw becomes as [ formed / male screw / on the surface of the rod-like structure ] and which is equal to the usual bolt and the bond strength of a nut by pressure of the joint 1 in the joint method of construction mentioned later can be obtained.

[0014] The bore of a joint 1 is extent which a wall sticks on the surface of a rod-like structure at the time of joint method-of-construction completion (sticking by pressure), and both the attachment edge sticks. When a rod-like structure is a deformed bar, it is the outer diameter and equal of a body except a bamboo joint. In addition, of course [ in case a wall sticks on the surface of a rod-like structure as described above if it is in some which have a female screw 4 ], a female screw 4 eats away on the surface of a rod-like structure.

[0015] As shown in drawing 2, the joint method of construction of the rod-like structure of this invention compares a rod-like structure 5 and a rod-like structure 5, covers the joint 1 described above in that comparison section, and presses each rod-like structure 5 and 5 side using a proper crimping tool, for example, the portable charge-type crimping tool marketed. According to the size of a rod-like structure 5, although the force (10-50t) is required, a hydraulic crimping tool is used for this pressure at pressure of the Takani pile.

[0016] If the pressure connector 6 of a crimping tool is made to engage with the comparison section of the rod-like structures 5 and 5 covered with the joint 1 and it switches on, as an arrow head shows, the sliding dice 7 will move to the fixed dice 8 side, and a joint 1 will be pressed between both the dices 7 and 8. Each strip-of-paper-like heights 3 of a joint 1 are then pushed in into the dovetail-groove-like notch 2 which counters. Yamagata projected part 2a acts on slit 3a in the process, it deserts mutually and the tip side of the strip-of-paper-like heights 3 can be extended on both sides of the dovetail-groove-like notch 2. The wall of a joint 1 is stuck to coincidence by the front face of a rod-like structure 5 by pressure. In the case of the joint 1 which has a female screw 4, a female screw 4 eats away on the surface of a rod-like structure in that case.

[0017] According to such a joint method of construction, since it has spread in the dovetail-groove-like notch 2 which each strip-of-paper-like heights 3 counter, both the attachment edge is not opened any longer, but moreover, in case the wall of a joint 1 is stuck to a rod-like structure 5 by pressure, the bamboo joint is collapsed. If it is in the joint 1 which has a female screw 4, a female screw 4 eats into the front face of a rod-like structure 5, and serves as the same association as a bolt and a nut. It is proved that sufficient reinforcement is obtained from cutting in other parts other than the joint of a rod-like structure 5 by the tension test in any case.

[0018]

[Effect of the Invention] Since this invention is constituted as explained above, it does so effectiveness which is indicated below.

[0019] That is, since it can work by the light small tool, rod-like structures, such as a deformed bar, are

easily joinable also in a narrow location. Moreover, when forming a female screw in a joint inside, the die length of a joint can be made [ about 2 times / of the outer diameter of the rod-like structure for junction ] short, and sufficient bonding strength which moreover is not inferior to the conventional method of construction can be obtained. In that case, it is fully applicable also to junction of the round bar without a bamboo joint.

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[Translation done.]

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 CLAIMS
 

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## [Claim(s)]

[Claim 1] Two or more dovetail-groove-like notches are formed in one edge of the cylinder cleared in the direction of an axis. Counter the edge of another side with each notch, and form strip-of-paper-like heights, and the Yamagata projected part is formed in the center of a pars basilaris ossis occipitalis of each dovetail-groove-like notch. By covering the comparison section of a rod-like structure with the joint which formed the slit in the center of each strip-of-paper-like heights, and pressing each rod-like structure side of the joint The joint method of construction of a rod-like structure with which it is pushed in into the dovetail-groove-like notch which each strip-of-paper-like heights counter, and said Yamagata projected part advances into said slit in the process, the tip side of strip-of-paper-like heights can extend on both sides of a dovetail-groove-like notch, and a joint and a rod-like structure are stuck by pressure.

[Claim 2] The joint of the rod-like structure which formed two or more dovetail-groove-like notches in one edge of the cylinder cleared in the direction of an axis, countered the edge of another side with each notch, and formed strip-of-paper-like heights, and formed the Yamagata projected part in the center of a pars basilaris ossis occipitalis of each dovetail-groove-like notch, and formed the slit in the center of each strip-of-paper-like heights.

[Claim 3] The joint of the rod-like structure according to claim 2 which formed the female screw in the internal surface.

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 [Translation done.]



(19) 日本国特許庁 (J P)

(12) 公開特許公報 (A)

(11) 特許出願公開番号

特開平9-273266

(43) 公開日 平成9年(1997)10月21日

(51) Int.Cl. <sup>6</sup>	識別記号	片内整理番号	F I	技術表示箇所
E 0 4 C 5/18	1 0 2		E 0 4 C 5/18	1 0 2
F 1 6 D 1/04			F 1 6 S 3/06	
F 1 6 S 3/06			F 1 6 D 1/02	D

審査請求 未請求 請求項の数 3 F D (全 3 頁)

(21) 出願番号 特願平8-111254

(22) 出願日 平成8年(1996)4月8日

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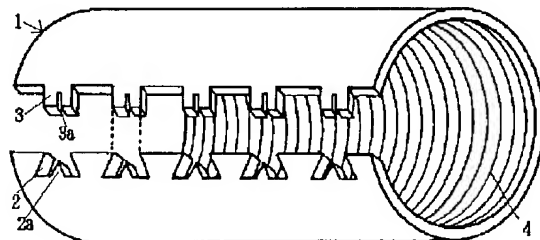
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(54) 【発明の名称】 棒状体の継手工法及びそれに用いる継手

(57) 【要約】

【課題】 異形鉄筋等の棒状体を狭い場所でも容易に接合することができる継手工法及びそれに用いられる継手を提供する。

【解決手段】 軸線方向に切り開いた円筒の一方の縁に複数の蟻溝状切欠部2を形成し、他方の縁に各切欠部2と対向して短冊状凸部3を形成し、且つ、各蟻溝状切欠部2の底部中央に山形突部2aを形成し、各短冊状凸部3の中央にスリット3aを形成した継手1により棒状体の突き合わせ部を覆い、その継手1の各棒状体側を圧迫することにより、各短冊状凸部3が対向する蟻溝状切欠部2中に押し込められ、その過程で山形突部2aがスリット3aに進入して短冊状凸部3の先端側が蟻溝状切欠部2の両側に広げられ、且つ、継手1と棒状体が圧着される。



## 【特許請求の範囲】

【請求項1】軸線方向に切り開いた円筒の一方の縁に複数の蟻溝状切欠部を形成し、他方の縁に各切欠部と対向して短冊状凸部を形成し、且つ、各蟻溝状切欠部の底部中央に山形突部を形成し、各短冊状凸部の中央にスリットを形成した継手により棒状体の突き合わせ部を覆い、その継手の各棒状体側を圧迫することにより、各短冊状凸部が対向する蟻溝状切欠部中に押し込められ、その過程で前記山形突部が前記スリットに進入して短冊状凸部の先端側が蟻溝状切欠部の両側に広げられ、継手と棒状体が圧着される棒状体の継手工法。

【請求項2】軸線方向に切り開いた円筒の一方の縁に複数の蟻溝状切欠部を形成し、他方の縁に各切欠部と対向して短冊状凸部を形成し、且つ、各蟻溝状切欠部の底部中央に山形突部を形成し、各短冊状凸部の中央にスリットを形成した棒状体の継手。

【請求項3】内壁面に雌ネジを形成した請求項2に記載の棒状体の継手。

## 【発明の詳細な説明】

## 【0001】

【発明の属する技術分野】この発明は、ビルや橋梁等の建築物の構築に使用される異形鉄筋等の棒状体を長さ方向に突き合わせて接合する継手工法及びそれに用いる継手に関するものである。

## 【0002】

【従来の技術】異形鉄筋の継手工法として、従来、図3に示す工法が知られている。その継手工法は、スクイズジョイント工法と称するものであり、異形鉄筋5、5の突き合わせ部を内径に余裕のある筒状のスリーブ9で覆い、そのスリーブ9を締付け機械のダイス10で矢印方向に絞り、絞られたスリーブ9の内壁を異形鉄筋5のプリント部（竹節）に食い込ませて一体化するものである。

## 【0003】

【発明が解決しようとする課題】上記のスクイズジョイント工法に用いる締付け機械は、65Kgもある重く、大きなものであり、その扱いが容易でないばかりでなく、特に、複数本の異形鉄筋5が密接して組まれている現場では、使用すら不可能である。また、継手として用いられるスリーブ9は、必要強度を出すには、17～28cmもの長いものが必要である。

【0004】この発明は、異形鉄筋等の棒状体を狭い場所でも容易に接合することができる継手工法及びそれに用いられる継手を提供することを目的としている。

## 【0005】

【課題を解決するための手段】この発明の棒状体の継手工法は、軸線方向に切り開いた円筒の一方の縁に複数の蟻溝状切欠部2を形成し、他方の縁に各切欠部2と対向して短冊状凸部3を形成し、且つ、各蟻溝状切欠部2の底部中央に山形突部2aを形成し、各短冊状凸部3の中

央にスリット3aを形成した継手1により棒状体5の突き合わせ部を覆い、その継手1の各棒状体5、5側を圧迫することにより、各短冊状凸部3が対向する蟻溝状切欠部2中に押し込められ、その過程で山形突部2aがスリット3aに進入して短冊状凸部3の先端側が蟻溝状切欠部2の両側に広げられ、且つ、継手1と棒状体5が圧着されるものである。

【0006】この発明の棒状体の継手は、軸線方向に切り開いた円筒の一方の縁に複数の蟻溝状切欠部2を形成し、他方の縁に各切欠部2と対向して短冊状凸部3を形成し、且つ、各蟻溝状切欠部2の底部中央に山形突部2aを形成し、各短冊状凸部3の中央にスリット3aを形成したものである。

【0007】この継手の内壁面に雌ネジ4を形成するとよい。

## 【0008】

【発明の実施の形態】図1及び図2を参照し、この発明の棒状体の継手工法及びそれに用いる継手の実施の形態について説明する。

【0009】この継手工法に用いる継手1は、図1に示すように、円筒を軸線方向に切り開き、その一方の縁に複数の蟻溝状切欠部2を形成し、他方の縁に各蟻溝状切欠部2と対向して短冊状凸部3を形成したものである。そして、各蟻溝状切欠部2の底部中央には、山形突部2aが形成され、各短冊状凸部3の中央には、スリット3aが形成されている。各短冊状凸部3の長さは、蟻溝状切欠部2の深さとほぼ等しくしてある。

【0010】この継手1の素材は、表面にだけ焼入れされた浸炭焼入れ鋼（表面の硬さと内部の粘りを備えている）が適している。肉厚は、接合対象棒状体5の太さが大である程厚くしなければならない。

【0011】継手1の内壁は、滑らかなままでもよいが、雌ネジ4を形成した方がよい。

【0012】内壁が滑らかな継手1は、専ら、表面に竹節を有する異形鉄筋5同士の接合に用いられる。

【0013】内壁に雌ネジ4を形成した継手1は、異形鉄筋5同士の接合にはもちろん、表面の滑らかな、いわゆる丸棒同士の接合や異形鉄筋5と丸棒の接合にも用いることができる。更に、雌ネジ4を有する継手1は、その長さを、接合対象棒状体の外径の2倍程度の、短いものとすることができる。それは、後述する継手工法における継手1の圧迫により、その雌ネジ4が棒状体の表面に食い込み、あたかも棒状体の表面に雄ネジが形成されたごとくになり、通常のボルトとナットの結合強度に匹敵する強度を得ることができるからである。

【0014】継手1の内径は、継手工法完了時に内壁が棒状体の表面に密着（圧着）し、且つ、両衝合縁が密着する程度のものである。棒状体が異形鉄筋である場合には、竹節を除いた本体の外径と等しいものである。なお、雌ネジ4を有するものにあつては、上記したよう

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に、内壁が棒状体の表面に密着する際に、雌ネジ4が棒状体の表面に食い込むことはもちろんである。

【0015】この発明の棒状体の継手工法は、図2に示すように、棒状体5と棒状体5を突き合わせ、その突き合わせ部に、上記した継手1を覆い、その各棒状体5、5側を適宜の圧縮工具、例えば、市販されている充電式の携帯用圧縮工具を用いて圧迫するものである。この圧迫には、棒状体5の太さに応じて10～50tの力が必要であるが、高荷重の圧迫には、油圧式の圧縮工具が用いられる。

【0016】継手1で覆われた棒状体5、5の突き合わせ部に圧縮工具の圧縮端子6に係合させ、スイッチを投入すると、矢印で示すように、摺動ダイス7が固定ダイス8側に移動し、継手1は両ダイス7、8間で圧迫される。そのとき、継手1の各短冊状凸部3は対向する蟻溝状切欠部2の中に押し込められる。その過程で山形突部2aがスリット3aに作用して短冊状凸部3の先端側を互いに離反し、蟻溝状切欠部2の両側に広げられる。同時に、継手1の内壁が棒状体5の表面に圧着される。その際、雌ネジ4を有する継手1の場合には、雌ネジ4が棒状体の表面に食い込む。

【0017】このような継手工法によれば、各短冊状凸部3が対向する蟻溝状切欠部2の中で広がっているため、両衝合縁は最早開かず、しかも、継手1の内壁が棒状体5に圧着される際に、その竹節は圧壊される。雌ネジ4を有する継手1にあつては、雌ネジ4が棒状体5の表面に食い込んであたかもボルトとナットと同様の結合となる。いずれの場合も、引張試験により、棒状体5の接合

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部以外の他の部分で切断することから、十分な強度を得ることが実証されている。

【0018】

【発明の効果】この発明は、以上説明したように構成されているので、以下に記載するような効果を奏する。

【0019】即ち、軽く小さな工具により作業をすることができるので、狭い場所でも容易に異形鉄筋等の棒状体を接合することができる。また、継手内面に雌ネジを形成する場合は、継手の長さを接合対象棒状体の外径の2倍程度の、短いものとすることができ、しかも従来工法に劣らない十分な接合強度を得ることができる。その場合は、竹節のない丸棒の接合にも充分に適用可能である。

【図面の簡単な説明】

【図1】この発明の棒状体の継手の斜視図である。

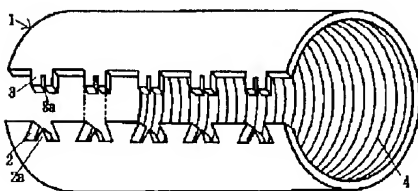
【図2】この発明の棒状体の継手工法を説明する斜視図である。

【図3】従来のスクイズジョイント工法を説明する断面図である。

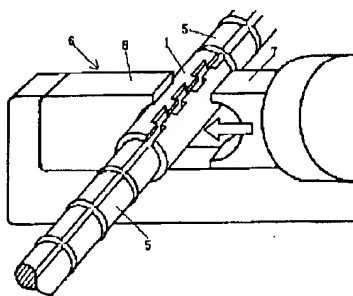
【符号の説明】

- 1 継手
- 2 蟻溝状切欠部
- 2a 山形突部
- 3 短冊状凸部
- 3a スリット
- 4 雌ネジ
- 5 棒状体
- 7 摺動ダイス

【図1】



【図2】



【図3】

